Greetings:

This year marks the 20th year of the National Space Grant College and Fellowship Program, simply known as Space Grant, that was established by Congress to improve science, technology, engineering, and mathematics (STEM) education across the nation and to prepare the workforce needed for our space and aeronautics industries. Every five years NASA conducts extensive reviews to evaluate the Space Grant consortia in every state plus Puerto Rico and the District of Columbia. Such a process just ended and we are pleased that our New York Space Grant (NYSG) Consortium received excellent reviews. Diane DeTroye, the NASA Space Grant Manager, wrote “Congratulations on your consortium’s excellent performance on the 20th Year Evaluation of the National Space Grant and Fellowship Program... Your dedication to the program and commitment to this process greatly enhanced the outcome of this evaluation and contributed to the improvement of the national program.”

NYSG tries to reach as many of the 270 higher education institutions in New York State as possible. This year SUNY Binghamton became a member of our consortium. In this newsletter you can read highlights from many of our NYSG affiliates involved in projects such as scientific ballooning, small satellites, astronomy, and rocketry. Fourteen New York students won prestigious Space Grant internships, working at various NASA centers and at our industrial affiliate, Lockheed Martin. In addition, this year we were able to fund eight research and curriculum enhancement proposals on subjects like “Liquid Fuel Combustion,” “Measuring the Shape of the Milky Way,” and “Dynamics and Instabilities of Aircraft Wake Vortices.”

In New York we look forward to continuing and enhancing our NASA Space Grant program, and striving to work with an even larger number of academic institutions and industry.
Medgar Evers College continued with its BalloonSAT program (MECSAT), this past April participating in a simultaneous launch with 14 colleges and universities. The event was coordinated by Taylor University and supported by the Indiana Space Grant Consortium. The balloon payloads included carbon dioxide monitors and temperature, humidity, and pressure sensors. An airborne network was also established during the launch. Under less-than-ideal conditions of April snow and an encroaching storm, MECSAT team members trekked through a snowy swamp in the Green Mountains foothills to successfully recover their payloads. Two other members of the coordinated launch, DePaul University and Norfolk University, attended a MECSAT BalloonSAT and ozone training workshop in November 2007 prior to getting their BalloonSAT programs underway.

MECSAT also continued expanding its ozone monitoring program to include joint launches between its Paradox, NY base in the Adirondacks and a National Weather Service sounding facility in Brookhaven, Long Island. Brookhaven is ideally situated downwind of New York City, providing significant research data. The MECSAT ozone investigations facilitated the development of extended programs at University of Houston-Downtown (UHD) and South Carolina State University (SCSU), where MECSAT students and faculty assisted with the first SCSU faculty/student ozonesonde launches in June 2009. MECSAT’s NY Space Grant scholars presented their work at the fall 2008 American Geophysical Union meeting and the January 2009 American Meteorological Society’s Student Research Conference.

Recently Medgar Evers College won an award through the Space Grant Minority Serving Institution Partnership Development Competition to support the development of a City University of New York (CUNY)-wide nanosatellite program: CUNYSAT.

MEC, City College of New York, York College, Hunter College, Queensborough Community College, and LaGuardia Community College are the CUNY campuses currently involved. The PI and co-PI are Prof. Shermane Austin (MEC) and Prof. Mason Peck (Cornell University) respectively. The project start-up was a two-day CubeSat workshop hosted by Cornell in early June, with over twenty-five CUNY student and faculty participants. Though a principally student-built pathfinder, constructed with standard subsystems around the CubeSat development kit, CUNYSAT will include a Global Positioning System.
Fall 2009

New York Space Grant Affiliate Directors and Institution Locations

Prof. Yervant Terzian, Cornell University (Director)
Prof. Wayne Anderson, SUNY Buffalo
Prof. Shermane Austin, Medgar Evers College, CUNY
Prof. Thomas Balonek, Colgate University
Mr. Steven Betza, Lockheed Martin
Prof. Edward Brown, Manhattan College
Prof. David Ferguson, SUNY Stony Brook
Prof. Susannah Fritton, City College of NY, CUNY
Prof. David Helfand, Columbia University
Prof. Hiroshi Higuchi, Syracuse University
Prof. Vikram Kapila, Polytechnic Institute of NYU
Prof. Rebecca Koopmann, Union College
Prof. Reshmi Mukherjee, Barnard College
Prof. Heidi Newberg, Rensselaer Polytechnic Institute
Prof. Chris O’Dea, Rochester Institute of Technology
Prof. Tim Paglione, York College, CUNY
Prof. Judith Pipher, University of Rochester
Prof. Aaron Steinhauer, SUNY Geneseo
Prof. David Toot, Alfred University
Prof. Charles Trautmann, Sciencenter
Prof. Daniel Valentine, Clarkson University
Prof. Eva Wu, SUNY Binghamton

(GPS) scintillation experiment using a Cornell-developed GPS receiver. The CUNYSAT preliminary design review was held in July at the NASA/Goddard Institute for Space Studies (GISS) in New York City. Reviewers included Tom Danckwerth, Director of Engineering and Technology at Goodrich, and Irene Yachbes of Honeybee Robotics.

This summer two MEC students, Kitwana Bruno and Riguel Fabre, interned at NASA Goddard Space Flight Center. They worked with Dr. Doug Rowland, a heliophysicist and principal investigator of the National Science Foundation-funded Firefly project. Firefly will utilize a 3U CubeSat to investigate gamma ray connections to lightning. Bruno and Fabre, both computer science students, developed a Mission Planning Tool for CubeSats in orbit which will be shared with the CUNYSAT project.

CUNYSAT students and faculty attending a CubeSat workshop held at Cornell University.
Syracuse University

Syracuse University’s Department of Mechanical and Aerospace Engineering received a generous gift from aerospace engineering alumnus William “Ted” Frantz, who provided the funding to purchase and install a Fidelity Motus 622i full-motion flight simulator. After its summer 2008 delivery to Link Hall, the simulator was dedicated in the fall with Frantz and Prof. Hiroshi Higuchi conducting its maiden flight.

Home of Syracuse’s L.C. Smith (LCS) College of Engineering and Computer Science, Link Hall was named for Edwin A. Link, creator of the Link Flight Simulator Company and the Link Trainer that was used extensively for pilot training during World War II. Earl Kletsky, a former LCS dean, obtained and rebuilt a historic Link Trainer to its original operational condition in the late 1980s. As time progressed, its maintenance became more difficult and its flight dynamics were not as realistic as modern trainers. Hence Prof. Higuchi, an instrumented-rated commercial pilot and flight instructor, traveled to Pittsburgh and England to research various flight simulators, and discovered the Fidelity Motus 622i met all of the College’s needs. Several aircraft types (e.g., single-engine Cessna, regional jet, and other FAA-approved flight training models) are implemented in the new simulator, which also allows students to design, experiment, and fly their own aircraft.

Prof. Higuchi applied for and obtained an NYSG higher education grant to incorporate the simulator into existing and new aerospace engineering curricula. It has been implemented with great success in his “AEE427: Aircraft Performance and Dynamics” course and lab. This was many students’ first time experiencing flight controls and getting a hands-on “feel” for various aircraft stability issues covered in the lectures. Prof. Higuchi plans to develop a new course on introductory flight simulation as well as a course that deals with more technical aspects of flight simulation.

Rensselaer Polytechnic Institute

Rensselaer provided Space Grant graduate student fellowships and undergraduate research opportunities, funding graduate students early in their careers to help jump-start their research. Our first Space Grant fellowship recipient, Nathan Cole, graduated this past year and is now a post-doc at The Johns Hopkins University. This year’s fellowship went to first-year graduate student Matthew Newby, who has chosen to start his research career building on Nate’s success in mapping the Milky Way galaxy. Aiding in the mapping are 28,000 people in 155 countries who have donated their computing cycles at a rate of 160 teraflops (equivalent to the 6th largest supercomputer in the world, as of June 2008) through the Milkyway@Home project.

This year we supported five undergraduate student researchers with Space Grant funds – three in Astronomy, one in Computer Science, and one in Geology. These opportunities give undergraduates the chance to hone their skills while helping faculty advisors with preliminary research for NASA grant proposals. For example, Sara Helles is researching literature about active faulting (slip rates) estimates for western U.S. earthquake faults. The slip rate estimates will be used along with GPS surface velocity estimates to further understand the distribution of fault slips and ultimately earthquake hazards.

Sara Helles researches U.S. earthquake hazards.
During the 2008-2009 program year, Professor Vikram Kapila and his students conducted several research and outreach activities with NY Space Grant support. The activities focused on advanced control technology for aerospace systems, mechatronics-related experiments, and pre-college outreach. This article briefly highlights their use of a sampled-data approach to achieve chaotic synchronization.

Synchronization of chaotic oscillators is frequently sought in many scientific and engineering systems like secure communications, multi-vehicle robotics, and meteorology. A system of two identical, unidirectionally coupled oscillators is generally referred to as master-slave synchronization. Although a vast majority of prior research focuses on continuous-time systems, this group considered the problem of synchronizing a master-slave chaotic system in the sampled-data setting using an Euler approximation technique, the discrete-time Lyapunov stability theory, and the linear matrix inequality framework. The experimentally validated research results appeared in the Proceedings of the IISc Centenary International Conference and Exhibition on Aerospace Engineering (ICEAE2009). Currently the team is exploring potential applications of chaos-based methods to sensor calibration and damage detection.

This past summer Professor Kapila directed the Science and Mechatronics Aided Research for Teachers (SMART) project under National Science Foundation’s Research Experience for Teachers Site program. Several students, supported in part by New York Space Grant, assisted the SMART project’s nine teachers with hands-on learning of mechatronics and robotics and aided in their research projects. See http://mechatronics.poly.edu/ for additional details.

### Barnard College

The following Barnard College students, fully or partially funded by NYSG, conducted research in various fields during summer 2009:

**Talia Clark** worked on the Laser Interferometer Gravitational-Wave Observatory (LIGO) project with Prof. Fritschel at the Massachusetts Institute of Technology.

**Gillian Drake** researched biophysics and quantum dots with Prof. Arisaka at the California Nanosystems Institute, a research center at the University of California Los Angeles.

**Gwen Effgen** worked on biophysics research, concentrating on cell death and protein activation, at the Neurotrauma & Repair Laboratory at Columbia University.

**Erin Kara** analyzed data from the Fermi Gamma-ray Space Telescope during her internship at NASA Marshall Space Flight Center. As the “Burst Advocate,” she performed the initial analysis of a long gamma-ray burst (GRB 090717) and was first author on GCN Circular number 9692. See page 11 for Erin's reflections on her NASA internship.

**Anne Norrick** conducted astroparticle experimental research, relating to the Double Chooz neutrino experiment, with Prof. Reshmi Mukherjee at Barnard. She also presented analysis results at a Double Chooz collaboration meeting and attended the SLAC National Accelerator Laboratory Summer Institute.

### Polytechnic Institute of NYU

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Rapid development of low-power, low-cost microcontrollers is having a tremendous impact on new applications in science and engineering. Most microcontrollers on the market have prices starting under $0.50 and averaging less than $5. These microcontrollers have capabilities comparable to a typical programmable logic controller deployed with NASA Kennedy Space Center's (KSC) ground power system, which involves over $10,000 in controller hardware for a very similar Input/Output interface count. A NASA Exploration Systems Mission Directorate (ESMD) Senior Design Project challenge was to design, build, and test a microcontroller-based “universal wireless sensor” with modern materials such that the final device costs less than $20.

As part of a biomedical engineering senior design course at the City College of New York, five students were selected to work on this ESMD project. Below is a diagram depicting the overall system. An analog signal produced by a sensor is digitized by the microcontroller and moved into memory for either data storage or transmittal, depending on the microcontroller's mode. A ZigBee transceiver transmits the data wirelessly, which can be captured by a ZigBee modem connected to a personal computer.

Students analyzed microcontrollers and transceivers from different manufacturers to determine the best combination to achieve the device specifications. A system prototype was built and a simple application was programmed in C++ to transmit a known signal of interest. Matlab was used to analyze the received data in the time and frequency domains. Tests of the final prototype’s capabilities demonstrated it could transmit and receive signals in unobstructed or obstructed conditions at distances of at least 135 feet. In addition, it could do so with a very high accuracy (≥90%) in tests around a 90-degree hallway corner or through a steel wall. The quality of the transmitted signal was verified using sinusoidal and electrocardiogram waveforms. This ESMD senior design project was truly enriching for our biomedical engineering students, as they integrated their engineering and medical knowledge to solve a real-world challenge for NASA.

York College’s Space Grant program had a fulfilling year. During the academic year undergraduate Nicholas Hunt-Walker modeled gamma-ray emission from starburst galaxies and conducted observations at the MDM Observatory on Kitt Peak in Arizona. Nick was involved in all aspects of observing with both the 2.4 and 1.3 meter telescopes, while his advisors Prof. Tim Paglione (York) and Prof. Charles Liu (College of Staten Island) worked simultaneously on spectroscopic and imaging observations of compact emission line galaxies. He spent the spring semester reducing MDM images of the interacting galaxy Arp 195. After interning at the American Museum of Natural History (AMNH) last summer, Nick worked on X-ray observations this summer as a Research Experiences for Undergraduates (REU) intern at the Univ. of Wisconsin, Madison.
Columbia University’s new Bridge to the Ph.D. Program in the Natural Sciences offers college graduates, from groups underrepresented in the sciences, opportunities to work as research scientists while undertaking coursework and other preparatory activities required for admission to Ph.D. programs. The Department of Astronomy is host to two of the program’s post-baccalaureates - one of whom, Nitza Santiago, received New York Space Grant support this past year.

Nitza came to Columbia in August 2008 as a physics graduate of the University of Puerto Rico in Humacao, where only a small number of astronomy courses are taught. While she had several undergraduate astronomy research experiences and significant involvement in astronomy outreach, she was not yet ready to enter a Ph.D. program. She immediately began working with Prof. Mary Putman on a project to study the gas content and star formation in the vicinity of the galaxy ESO 481-G017. Nitza showed great initiative from the start, and her work uncovered a neutral hydrogen cloud (an HI cloud) in the vicinity of an intergalactic ionized hydrogen cloud (an HII region), 700 km/s offset from the parent galaxy (see figure below). Intriguingly, the gas and implied dark matter mass of the HI cloud indicate it resembles a dwarf galaxy, but with very few stars and new stars forming just beyond the location of the gas. She is working on a paper describing this discovery.

Nitza presented her work at the National Society of Black Physicists/National Society of Hispanic Physicists meeting in Nashville in February, and returned to Tennessee in July to present a poster at the “Galaxy Wars: Stellar Populations and Star Formation in Interacting Galaxies” conference. She continues to be an active participant in Columbia's Department of Astronomy outreach program. As part of the “open night” on June 26th, she held a lecture in Spanish entitled, “¿Qué te pasó, pobre pequeño Plutón?”

In parallel to her research work, she completed two semesters of the Astrophysics course sequence, a physics GRE preparation course, and several language classes to improve her English. Nitza has been very successful and is well on her way towards a thriving graduate career.

This summer York College’s Space Grant program supported in part five local students parallel to the City University of New York (CUNY)/AMNH REU program. One of these students, Madison Crocker from City College of New York, worked with Prof. Paglione on correlating gamma-ray models to radio and infrared data of starburst galaxies. She also learned the Fermi Gamma-ray Space Telescope software and data structure in preparation for the first year data that was released later in the summer. Madison will continue working throughout the academic year, building upon the Space Grant research project Prof. Paglione completed while on sabbatical at AMNH this past year.

Student interns at AMNH, left to right: Edina Celjaj (Borough of Manhattan Community College, CUNY), Alexandra Greenbaum (AMNH/Rensselaer Polytechnic Institute), Daniel Feldman (College of Staten Island, CUNY), and Madison Crocker (City College of New York, CUNY).
Since joining the NY Space Grant Consortium two years ago, Stony Brook University’s Louis Stokes Alliance for Minority Participation (LSAMP) program has placed seven LSAMP undergraduates in NASA-related research with professors at the university and Brookhaven National Laboratory. During summer 2009 Poornima Peiris worked on a project to determine the viability of the Martian atmosphere providing the necessary feedstock to create fuels for returning to Earth. Her research was supervised by Prof. Devinder Mahajan at Stony Brook University and Brookhaven National Laboratory’s Advanced Fuels Group. Space Grant funds have not only provided exceptional research experiences, but have also inspired the students to strive to greater excellence in STEM disciplines. The previous six Space Grant awardees have continued on to highly competitive research placements and admission to various graduate schools:

Stony Brook NYSG Summer Research Placements
- Undergraduate Research and Excellence in Creative Activities at Stony Brook, Department of Atmospheric Sciences
- National Institutes of Health, Biomedical Engineering Summer Internship Program in Bethesda, Maryland
- Howard Hughes Medical Institute at Columbia University

Stony Brook NYSG Graduate School Placements
- Drexel University, post-baccalaureate program
- University of Arizona, PhD program in Planetary Sciences
- Stony Brook University, MS in Atmospheric Sciences (recipient of a National Science Foundation Bridge to the Doctorate fellowship)

Sagan Planet Walk - New Asteroid Station (Touch a Real Meteorite!)

A bright and steamy August 17, 2009 marked the dedication ceremony for the newest stop on the Sagan Planet Walk: the Asteroid station. The Sagan Planet Walk is a walking scale model of the solar system, extending 1.2 kilometers from the center of downtown Ithaca, NY to the Sciencenter, a hands-on museum and NY Space Grant affiliate institution. This outdoor exhibit was created by the Sciencenter in 1997 in memory of Ithaca resident, Cornell professor, and renowned science educator/communicator Carl Sagan. The new Asteroid station, located at 116 East Seneca Street between the Mars and Jupiter stations, features a real, touchable meteorite. NY Space Grant and local businesses helped fund the creation of the station plus updates of associated educational and wayfinding materials. Ithaca residents and visitors can freely tour the exhibit at their own pace, learning more about the solar system and touching an ancient celestial object, during rain, snow, or shine. Refer to http://www.sciencenter.org/saganpw/ for more information on the Sagan Planet Walk.
The University at Buffalo utilized Space Grant funds to cultivate the future STEM workforce in various ways: fellowships, support for a research assistant, and support of programs to interest females and minorities in engineering careers.

Fellowships were awarded to five students who studied “ZnO for Electronic Applications,” “Design and Analysis of Weak Stability Boundary Transfer Orbits for Artemis Mission,” “Attitude Control of Under-Actuated Space Structures,” “Control System Design for Autonomous Landing of Spacecraft,” and “Robust Adaptive Control Design for Uncertain Space Systems.” One of these awardees, Bradley Cheetham, also gave presentations to local groups to interest more students in NASA endeavors. Cheetham was nominated by NY Space Grant and selected into the first group of NASA Student Ambassadors.

The University at Buffalo’s American Association for University Women sponsored the annual Tech Savvy conference to provide middle school girls, parents, and counselors information about STEM careers. NYSG affiliate director Prof. Wayne Anderson and Bradley Cheetham conducted a workshop for this event.

Designed to interest inner-city high school students in engineering careers, the Buffalo-area Engineering Awareness for Minorities (BEAM) summer program consisted of classes Mondays through Thursdays, tours of industrial or educational facilities on Fridays, group activities, and one-on-one research experiences with university faculty. Tours included the General Motors Powertrain plant, hosted by the plant manager and a manufacturing engineer, a BEAM alumnus. Eight BEAM post-11th grade students were mentored by University at Buffalo faculty as part of the Research Honors Summer Program. For example, Michael-Dane Alexander was mentored by Dr. Jennifer Zirnheld (Acting Director of the Energy Systems Institute) on research culminating in a paper titled “Inductive Coupling, The Wireless Transfer of Electrical Energy.” The U.S. Department of Labor selected BEAM as one of two nationwide winners of the 2008 Exemplary Public Interest Contribution (EPIC) Award. This award “honors public interest organizations that have supported equal employment opportunity and linked their efforts with those of federal contractors to enhance the equal employment opportunities for minorities, women, individuals with disabilities, and veterans.”

Grant Tremblay is an Astrophysics Ph.D. student working with Prof. Chris O’Dea and Prof. Stefi Baum at the Rochester Institute of Technology. Grant’s interests are in active galaxies, specifically radio-loud unification models, Active Galactic Nuclei (AGN)/host galaxy connections, and cooling flows in clusters of galaxies framed in the context of AGN feedback. His most recent publication presents Hubble Space Telescope observations of extended narrow-line emission in nearby radio galaxies. Grant is currently working on a paper discussing episodic star formation coupled to re-ignition of radio activity in the giant radio galaxy 3C 236, one of the largest objects in the Universe.
**2009 CNY Rocket Team Challenge**

The Milton J. Rubenstein Museum of Science & Technology (MOST) and Syracuse University teamed up for the 2009 Central New York (CNY) Rocket Team Challenge. Starting at 9:00 a.m. on Saturday, June 6, eighty rockets blasted off from Syracuse University’s Skytop Field.

Coordinated by MOST’s Exhibit Manager Peter Plumley, teams of four and five middle or high school students designed, built, and launched high-power rockets capable of ascending 200 to 400 meters. Months before launch, teams received materials, rocket simulation software, and training to help build their rockets. Each rocket carried an “eggstronaut,” a device to provide real-time audio and video transmission to the launch site, and an altimeter to measure the overall trajectory (velocity and acceleration) and peak altitude. On-board rocket videos are posted at: http://www.most.org/2_ee_rocketeams.cfm#videos

Students were judged on the aesthetics of their rocket, presentation of the finished product, successful flight (including recovery of the “eggstronaut”), and precision in estimating the peak altitude. Professional engineers and Syracuse University students and faculty judged the designs and presented awards to the winning teams. All rocket teams received a certificate of participation. Members of the top four teams in each division, middle school (4th through 8th grade) or high school, received commemorative medallions and plaques for their associated schools.

The CNY Rocket Team Challenge sponsors were Lockheed Martin, Technology Alliance of Central New York, and the New York Space Grant. Syracuse University’s L.C. Smith College of Engineering and Computer Science and the Syracuse Rocket Club provided technical and coordination support.

**RockOn! 2009 Workshop**

At 5:30 a.m. on Friday, June 26, a NASA sounding rocket lifted off the Wallops Flight Facility pad and quickly raced a 654-pound payload beyond Earth’s atmosphere to an apogee of 124 kilometers. Contained within the payload were 19 projects built during the RockOn! workshop and 10 university projects designed over the past year for RockSat. This was the second year for RockOn!, a hands-on workshop in which participants build a small rocket payload and launch it on a sounding rocket.

With New York Space Grant and Syracuse University sponsorship, Prof. Peter Plumley and aerospace engineering graduate student Aaron Orbaker participated in the six-day workshop. Teams of faculty and students built self-contained, multi-sensor electronic payloads capable of recording and storing a wide range of parameters, such as triaxial acceleration, pressure, temperature, and radiation. Participants were engaged in most phases necessary to prepare a sounding rocket for spaceflight, and had front-row seats at the pre-dawn launch.

NASA provided a two-stage Terrier-Improved Orion rocket for the RockOn! launch. This vehicle is capable of placing 200- to 800-pound payloads into space. On re-entry, the payload sections splashed down in the Atlantic Ocean where the experiments were recovered and returned to Wallops for post-flight analysis. The New York team’s project was flawless, recovering all data documenting the entire trajectory of the mission.

First place team from Gillette Road Middle School in Cicero, NY.


Team NY: Peter Plumley and Aaron Orbaker.
NY Space Grant Student Internships at NASA & Industry: Summer 2009

This summer NYSG supported student research at affiliate institutions, and awarded stipends and travel funds to thirteen NY student interns at NASA centers, including Exploration Systems Mission Directorate (ESMD) and NASA Academy interns. Lockheed Martin funded an additional Space Grant student internship. Details on the NASA and Lockheed Martin internships are provided in the table below.

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<tr>
<th>Location</th>
<th>Students</th>
<th>Students’ Home Institutions</th>
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<tr>
<td>NASA Ames Research Center</td>
<td>1</td>
<td>Columbia University</td>
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<tr>
<td>NASA Glenn Research Center</td>
<td>1</td>
<td>Cornell University</td>
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<td>NASA Goddard Space Flight Center</td>
<td>3</td>
<td>Clarkson University, Cornell University, and Rensselaer Polytechnic Institute</td>
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<tr>
<td>NASA Jet Propulsion Laboratory</td>
<td>2</td>
<td>Rensselaer Polytechnic Institute and SUNY Binghamton</td>
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<td>NASA Kennedy Space Center</td>
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<td>SUNY Binghamton</td>
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<td>NASA Langley Research Center</td>
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<td>SUNY Buffalo and University of Maryland College Park(^1)</td>
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<tr>
<td>NASA Marshall Space Flight Center</td>
<td>2</td>
<td>Barnard College and SUNY Buffalo</td>
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<tr>
<td>Lockheed Martin facilities</td>
<td>2</td>
<td>Cornell University(^2) and Union College</td>
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\(^1\)Student is a NY State resident. \(^2\)Student funded by NYSG affiliate Lockheed Martin.

Letters from NYSG Interns at NASA Marshall Space Flight Center

I’d like to thank you again for all your help in my participation in the NASA Propulsion Academy at Marshall Space Flight Center. It was an amazing, intense, life changing experience that has put me in a great position to achieve my future career goals.

Since we last spoke, my research group had completed data analysis and written a final report detailing our findings (see http://propulsion.msfc.nasa.gov/2009/teams/thruster_testing.html for more details). Needless to say, the project created quite a buzz at Marshall as it was the fastest creation, preparation, and implementation of a test rig and plan for any Reaction Control System (RCS) engine. My group was fortunate enough to have a photo shoot/feature article in the NASA Ares weekly update report, and be interviewed by NASA-TV during the Marshall intern poster presentation event. It was a very busy and excellent summer!

...As I am back here in Buffalo for my last semester, I would just like to thank you and the NY Space Grant for the large impact you have had on my undergraduate career. The experiences at NASA and various conferences I have attended through NYSGC funding have greatly affected my future career goals and aspirations. Thank you for helping me to dream bigger, ask for help more often, and remember to never give up on my goals.

--Matthew Cannella
SUNY Buffalo

I have only positive things to say about my NASA intern experience at Marshall Space Flight Center. This summer, I have learned more than I thought I ever could about high-energy astrophysics, gamma-ray bursts, the GLAST Burst Monitor (GBM) instrument on the Fermi Gamma-ray Space Telescope, and about the research profession in general. It is clear to me that the members of the GBM team are passionate about their work, and are more than willing to share their knowledge and experience... This summer I was welcomed as a part of the team, both socially and professionally. I was given the opportunity and the responsibility to make real science, and for that I am very grateful.

This internship has confirmed my desire to continue on in higher education in pursuit of a Ph.D. After working with the GBM team for 9 weeks, I have gained insights that one cannot learn from the classroom alone. I have analyzed data, collaborated with peers, written papers, attended conferences and made presentations. I can now really see myself having a career in research, whereas before, I was not even sure what a career in research fully entailed. ... My internship with the GBM team has made me reflect on my future academic and career plans, and has motivated me to continue on in this exciting and developing field.

--Erin Kara
Barnard University
Yervant Terzian with astronaut Dorothy Metcalf-Lindenburger at a NASA Education Forum before the STS-125 (Hubble Space Telescope Servicing Mission 4) launch.

Space Grant summer interns at Cornell.

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Fall 2009 New York Space Grant News

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http://astro.cornell.edu/spacegrant/